

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
Norfolk Division

TUBE-MAC INDUSTRIES, INC., *et al.*,)
Plaintiffs,)
)
v.)
)
STEVE CAMPBELL and)
TRANZGAZ, INC.,)
Defendants.)
_____)

Civil Action No. 2:20CV197 (RCY)

MEMORANDUM OPINION

Plaintiffs bring this action against Defendants for Correction of Inventorship of United States Patent No. 9,376,049 B2 (“’049 Patent”). (ECF 1, at 7-8.) Plaintiffs contend that Gary Mackay and Dan Hewson should be added as inventors on the ’049 Patent and several related foreign patents (“the patents-in-suit”). (*Id.* at 7.) The Court held a two-day bench trial taking testimony and admitting exhibits into evidence. In support of its verdict, the Court issues the following findings of facts and conclusions of law pursuant to Federal Rule of Civil Procedure 52(a).¹ For the reasons stated below, the Court finds Gary Mackay and Dan Hewson are co-inventors of the patents-in-suit.

I. FINDINGS OF FACT

Based on all the evidence presented at trial, including the Court’s assessment of the credibility of the witnesses and the weight given to each piece of evidence, the Court finds as follows:

¹Any item marked as a finding of fact that may also be interpreted as a conclusion of law is hereby adopted as such. Any item marked as a conclusion of law that may also be interpreted as a finding of fact is hereby adopted as such.

A. Parties

1. Steven Campbell (“Campbell”) is the sole inventor listed on the patents-in-suit. Campbell’s main focus has been to develop and commercialize light-weight pressure vessels for transporting natural gas through his companies Trans Ocean Gas, Inc. (“Trans Ocean Gas”) and, later, TranzGaz, Inc. (“TranzGaz”). (Final Pretrial Order, at 1 ¶¶ 1. 2-3 ¶¶ 7-9, ECF No. 168; Pl. Exs 1-2, 7, 9-10.) -
2. TranzGaz is alleged to own the patents-in-suit. (Final Pretrial Order, at 25 ¶¶ 44-45.)
3. Gary Mackay (“Mackay”) is the Founder and President of the Tube-Mac companies (collectively “Tube-Mac”). The original company was Tube-Mac Installations which became Tube-Mac Industries which then became Tube-Mac Piping Technology. (Trial Tr. 18:4-11.)
4. Tube-Mac Industries, Inc. (“Tube-Mac Inc.”) is the American subsidiary of Tube-Mac. (*Id.* 17:4-10, 69:9-19.) It does warehousing and limited manufacturing in Pennsylvania. (*Id.* 74:14-17, 75:25-76:7, 77:6-12.)
5. Tube-Mac Industries, Ltd. (“Tube-Mac Ltd.”) was the Canadian Tube-Mac entity at all times relevant during the facts giving rise to this action. (*Id.* 69:9-20.)
6. Dan Hewson (“Hewson”) is the Vice President of Projects at Tube-Mac. (*Id.* 108:1-20.)

B. Composites Atlantic Port Boss

7. Prior to working with Tube-Mac, Trans Ocean Gas contracted with Composites Atlantic Ltd. (“Composites Atlantic”) to fabricate pressure vessels. (*Id.* 80:12-16.)
8. The Composites Atlantic port boss applied pressure between the inner and outer plates against the liner. (*Id.* 105:25-106:3.) The Composites Atlantic port boss used a threaded

connection. (*Id.* 124:1-3; Pl. Ex. 33.) The Composites Atlantic design included a t-groove. (Trial Tr. 151:10-12; 157:15-20.)

9. On July 20, 2007, Trans Ocean Gas prepared a report (the “July 2007 Report”) outlining the liner fabrication process. (Pl. Ex. 12, at 1.) The report listed four core problems with the welding process: (1) the butt-fusion machine had a serious alignment problem, (2) the wall thickness of the domes was too thin, (3) the dome support system was inadequate, and (4) the thermal effects of butt-fusion welding were unacceptable. (*Id.*)
10. The July 2007 Report noted that a burst test was conducted on February 10, 2007. (*Id.*) It noted that a winding error “caused by dome/boss slippage” occurred. (*Id.*) The report noted that the dome boss interface required a higher torqued boss. (*Id.*)
11. The July 2007 Report described a second test in May 2007 in which the boss again slipped against the dome part of the liner. (*Id.* at 2.)
12. Composites Atlantic attributed the failed tests to the misalignment of the butt-fusion welding machine. (*Id.* at 3.)

C. Involvement of Tube-Mac

13. Campbell and Mackay first met at the Offshore Technology Conference in Houston on May 4, 2007. (Trial Tr. 19:21-25.) Campbell briefly explained the concept of his idea for transporting pressurized natural gas. (*Id.* 20:12-18.) Mackay briefly discussed Tube-Mac’s products, specifically Pyplok. (*Id.* 20:12-14.) Campbell and Mackay did not discuss the construction of port bosses or pressure vessels. (*Id.* 21:5-10.)
14. On May 22-23, 2007, at the bequest of Campbell, Desmond McGrath (“McGrath”) discussed Trans Ocean Gas and the pressure vessels with members of the Mackay family.

(*Id.* 279:5-8.) The Mackays became interested in investing in Trans Ocean Gas and eventually invested \$1.2 million Canadian into the company. (*Id.* 279:14-19.)

15. Mackay, Hewson, Geoffrey Mackay, and Robert Mackay visited Trans Ocean Gas in Newfoundland, Canada, in June of 2007. (*Id.* 21:22-22:10.)

16. Contemporaneously to this meeting, Trans Ocean Gas employees were also in Halifax, Canada, for the second test of their pressure vessels, as referenced in the July 2007 Report. (*Id.* 22:18-25.)

17. After the meeting, Campbell and Mackay exchanged phone calls. (*Id.* 21:22-23). Campbell informed Mackay that there were problems with the Composites Atlantic tests. (*Id.* 24:1-11.)

18. After the July 2007 Report, Tube-Mac was approached about working on more than just the piping component. (*Id.* 151:3-9, 156:1-6.) Prior to that, Tube-Mac was only working on the piping components. (*Id.* 156:5-6).

19. Hewson provided preliminary drawings to Campbell on August 17, 2007. (Pl. Ex. 11; Trial Tr. 111:23-113:21.)

20. Campbell provided Hewson the Composites Atlantic port boss in late August 2007. (Pl. Ex. 11, at 0000131; Pl. Ex. 33; Trial Tr. 123:20-124:4, 125:16-19.)

21. Mackay and Hewson's idea was to make special male and female plates, similar to those developed by Composites Atlantic, that would deform the plastic dome and then crimp the male and female pipes to lock it in place. (Trial Tr. 24:14-26:7; 114:3-11.) To achieve this, Mackay and Hewson needed to determine the correct type of force to apply between the plates to correctly deform the plastic liner. (*Id.* 24:21-26:2, 115:22-25.) The force was

applied using a hydraulic cylinder. (*Id.* 141:1-9.) When compressed, the plastic would flow into a t-groove created by the port boss components. (*Id.* 115:12-21.)

22. On September 5, 2007, Campbell sent Hewson port boss drawings designed by Composites Atlantic. (Pl. Ex. 11, at 0000132; Trial Tr. 113:4-21.) The Composites Atlantic drawings depict inner and outer parts with flat bases. (Pl. Ex. 11, at 0000135.) There are no grooves in either the lower or upper plate. (Ex 11, at 0000135-0000136.) There is no o-ring depicted in the drawing. (*Id.*) The pipe portions are flat. (*Id.*)

23. The initial differences between Hewson's design and the Composites Atlantic design are: (1) in Hewson's design the male and female parts are retained using the Pyplok crimping technology, whereas the Composites Atlantic design retained the male and female parts using a threaded connection, and (2) Hewson's design modified the t-grove. (Trial Tr. 114:3-11.) Hewson's design increased the surface area within the t-grove compared to the Composites Atlantic design. (*Id.* 151:10-18.)

24. At some point in 2007, Tube-Mac provided Campbell with a live demonstration on the method used to squeeze the male and female parts together. (Pl. Ex. 14; Pl. Ex. 26, at 92:18-23, 97:22-98:8; Pl. Ex. 19, at 99:16-100:8; Trial Tr. 174:22-175:10.)

25. Tube-Mac Ltd. developed and issued a series of designs for the port boss from September 2007 to November 2009. (Pl. Ex. 3.) These drawings were sent from Tube-Mac Ltd. to Campbell. (Trial Tr. 31:16-20.)

26. A design drafted on September 7, 2007, and issued on November 20, 2007, illustrated the outer part of the port boss connection. (Pl. Ex. 3, at 2; Trial Tr. 26:19-23.) The bottom of the outer part is flat. (*See* Pl. Ex. 3, at 2.) This draft was checked and initialed by Hewson. (*Id.*)

27. On October 18, 2007, Tube-Mac Ltd. gave a PowerPoint presentation at the behest of Campbell. (Trial Tr. 41:12-15, 42:5-22.) The PowerPoint was created by Hewson. (*Id.* 149:6-8.) Campbell was present for the presentation of the PowerPoint. (Pl. Ex. 19, at 100:9-101:4.)
28. In the PowerPoint, a diagram shows the port boss and illustrates: (1) the use of an o-ring, (2) a t-groove, and (3) the crimping of the inner and outer pipes. (Pl. Ex. 13, at 0000081; Trial Tr. 43:18-44:16.)
29. The PowerPoint shows how the plastic flows into the t-groove and around the o-ring when it is compressed, creating a seal. (Pl. Ex. 13, at 0000085; Trial Tr. 45:4-24.)
30. The PowerPoint lists “[s]lippage of boss on dome” as a design challenge and “[revising] the internal and external geometry of the boss to increase torsional rigidity” as a potential solution. (Pl. Ex. 13, at 0000086.)
31. On June 2, 2008, Tube-Mac Ltd. invoiced Trans Ocean Gas in the amount of \$82,401.76 for “Phase 1 of Bottle Fabrication” which included work performed from August 24 through October 15, 2007. (Pl. Ex. 21, at 1.)
32. On June 2, 2008, Tube-Mac Ltd. invoiced Trans Ocean Gas in the amount of \$98,678.23 for “Phase 2 of Bottle Fabrication” which included work performed from November 1, 2007 through January 16, 2008. (Pl. Ex. 21, at 2.)
33. There are two designs drafted on November 3, 2009, and issued on November 23, 2009. (Pl. Ex. 3, at 7-8.) One of the designs is for the outer plate. (*Id.* at 7.) In the design, the outer plate has a “starburst pattern of grooves.” (*Id.*; Trial Tr. 122:2-9.) The purpose of the starburst pattern was to create torsional rigidity and resist twisting. (Trial Tr. 122:5-9.) The other design is for the inner plate. (Pl. Ex. 3, at 8.) The inner plate has “angular grooves.”

(*Id.*; Trial Tr. 122:19-22; *see also* Ex. 31.) The purpose of the angular grooves was to create a seal between the plastic liner and the bottom inner plate. (Trial Tr. 122:18-22.)

34. A design drafted on December 2, 2009, and issued on December 7, 2009, illustrated the outer part of the port boss connection. (Pl. Ex. 3, at 4.) The underside of the outer part still has the starburst pattern of grooves. (*Id.*) These grooves were intended to “bite” into the plastic and reduce slippage. (Trial Tr. 83:14-20.)

35. The 2009 designs were provided to Campbell. (*Id.* 123:12-19.)

36. All of the work performed by Hewson and Mackay was on behalf of Tube-Mac Ltd., not Tube-Mac Inc. (*Id.* 69:9-20.)

D. Application of Pyplok

37. Pyplok is typically used on metal pipes. (*Id.* 129:22-130:1.) It is designed to connect two pipes together. (*Id.* 109:10-15.)

38. Prior to working with Trans Ocean Gas, Hewson had never used Pyplok technology on fiberglass, plastic, or with domed vessels. (*Id.* 116:9-15, 129:25-130:4.)

39. Prior to working with Trans Ocean Gas, Mackay had no knowledge of port bosses or pressure vessels. (*Id.* 105:9-15.)

E. Patent Applications

40. On August 22, 2011, Campbell filed patent application 61/526,020. (Pl. Ex. 16; Final Pretrial Order at 2 ¶ 7.) Campbell is listed as the sole inventor and the invention is entitled “METHOD OF FABRICATING TYPE 4 CYLINDER AND ARRANGING IN TRANSPORTATION HOUSINGS FOR TRANSPORT OF GASEOUS FLUIDS.” (Ex. 16.)

41. On September 8, 2011, Campbell filed patent application 61/532,452. (Pl. Ex. 17; Final Pretrial Order at 2-3 ¶ 8.) Campbell is listed as the sole inventor and the invention is entitled “METHOD OF FABRICATING TYPE 4 CYLINDER AND ARRANGING IN TRANSPORTATION HOUSINGS FOR TRANSPORT OF GASEOUS FLUIDS.” (Pl. Ex. 17.) This application contained additional drawings and text as compared to the August 22, 2011 application. (Final Pretrial Order at 2-3 ¶ 8.)
42. On August 22, 2012, TranzGaz filed an international patent application (“PCT Application”) CA2012/000778. (Pl. Ex. 2; Final Pretrial Order at 3 ¶ 9.) Campbell is listed as the sole inventor. (Pl. Ex. 2.) The PCT Application claimed priority to the 61/526,020 and 61/532,452 patent applications. (*Id.*)
43. Canadian Patent No. 2,845,724 was issued on February 19, 2014. (Pl. Ex. 7.) The Canadian patent lists Campbell as the inventor and TranzGaz as the owner. (*Id.*) The Canadian patent claims priority to PTC Application CA2012/000778, U.S. patent application 61/526,020, and U.S. patent application 61/532,452. (*Id.*)
44. Chinese Patent No. 103890480 was issued on January 20, 2016. (Pl. Ex. 9.) The Chinese patent references PTC Application CA2012/000778, U.S. patent application 61/526,020, and U.S. patent application 61/532,452. (*Id.*)
45. European Patent No. 2,748,512 was issued on December 19, 2018. (Pl. Ex. 10.) The European Patent claims priority to PTC Application CA2012/000778, U.S. patent application 61/526,020, and U.S. patent application 61/532,452. (*Id.*) It lists Campbell as the inventor and TranzGaz as the proprietor. (*Id.*)

F. The '049 Patent

46. On June 28, 2016, the United States Patent and Trade Office issued Patent No. 9,376,049.

(Pl. Ex. 1, at 1.) The '049 Patent lists Campbell as the inventor and TranzGaz as the assignee. (*Id.*)

47. Claim 1 states:

A lightweight intermodal container or road trailer based system for transporting refrigerated gaseous fluids, comprising: . . . at least one port boss affixed to each of said domed end portions, said at least one port boss including an inner component and an outer component . . . said inner and said outer components are compressed together to cause said inner plate to engage an inner surface of a respective one of said domed end portions and said outer plate to engage an outer surface of said respective one of said domed end portions to affix said at least one port boss to each of said domed end portions.

(*Id.* at 31-32.)

48. Claim 2 states: “The system as set forth in Claim 1, wherein said low-temperature resistant pressure vessels, comprise: . . . low-temperature resistant metallic polar port bosses on said liner” (*Id.* at 32.)

49. Claim 5 states: “The system as set forth in Claim 2, wherein said port bosses are affixed to the apex of a dome segment of said liner parts by compression and crimping.” (*Id.*)

50. The Detailed Description section notes:

Once the two port boss components 29 and 31 are seated into position, the two opposing plates 36 and 40 are compressed together so that the polymeric liner material between the plates becomes compressed polymeric material 44. The compression will elastically or even plastically deform the liner material The result of this is that when the opposing plates 36 and 40 are compressed together, the inner plate 36 will displace relative to the polymeric liner material 44 and outer surface of the outer plate 40, leaving a flush transition between the polymeric liner material 44 and the outside surface of the said outer plate 40. . . . The primary seal between the inner plate 36 and the sandwiched liner material 44 is an o-ring 35 positioned near the outer edge of the inner plate 36. . . . To further enhance the seal between the inner plate 36 and polymeric liner material 44, successive ring grooves 48 are machined into the surface of the inner plate

36. When the port boss plates 36 & 40 are compressed together, the polymeric liner material 44 is elastically or plastically deformed into these ringed grooves, each one enhancing the sealing effect of the port-boss liner interface. . . . As rotational stability of the liner 14 and port boss 28 is critical during the filament winding process, starburst grooves 50 are machined into the inner surface of the outer plate 40. These starburst grooves 50 increase the torsional/shear resistance between the outer port boss plate 40 and the deformed liner material 44.

(*Id.* at 28-29.)

51. The Detailed Description section also notes:

Once the port boss plates are compressed together so that the spacing between opposing plates is to a specific dimension, the crimp fitting 32 of the female component is cylindrically compressed such that the said fitting is permanently crimped onto the inner pipe 30. This can be accomplished with a single crimping; however, two or three crimps may be made such that the outer fitting 32 is plastically deformed and the inner pipe 30 is elastically deformed. Such plastic and elastic deformation in combination ensures a bonding tension between the two components.

(*Id.* at 28.)

52. Figures 7 and 8 illustrate the port boss components described in the Detailed Description section and referenced in Claim 5. Figures 7 and 8 contain the same key features included in the Tube-Mac designs. (Pl. Ex. 4; Pl. Ex. 5.)

G. Tube-Mac's Discovery of the Patent

53. Tube-Mac became concerned that Campbell was seeking a patent after an email that Tube-Mac received from a sub-distributor. (Trial Tr. 46:9-19.)

54. Campbell emailed one of the patent applications to Neil Smith, Tube-Mac's in-house counsel. (Pl. Ex. 22.) Neil Smith provided the application to Mackay and others at Tube-Mac to review. (*Id.*)

55. Mackay reviewed the patent application. (Trial Tr. 60:20-22.) After which he contacted his patent attorney.² (*Id.* 64:23-65:2.)

56. Mackay's patent attorney advised Mackay that Campbell was unlikely to have his patent application approved because of prior art. (*Id.* 67:24-68:8, 102:21-103:2.) Mackay did not instruct his attorney to contact the United States Patent and Trademark Office. (*Id.* 46:20-25; 67:21-23, 104:6-9.)

57. In 2018, Mackay had his patent attorney send a letter to Campbell stating that Mackay and Hewson should be listed as co-inventors on the '049 Patent. (*Id.* 104:15-20.)

H. TranzGaz

58. The name TranzGaz was conceived of in 2010, and a website URL was purchased. (Trial Tr. 195:4-6, 243:16-19.)

59. Steven Campbell Consulting Ltd. was created on December 5, 2011. (TranzGaz Ex. 7.)

60. In 2012, the name of Steven Campbell Consulting Ltd. was changed to TranzGaz. (Pl. Ex. 19, at 103:14-22; Trial Tr. 244:1-7.)

61. Campbell assigned the '049 patent to TranzGaz, and the patent assignment was recorded on March 24, 2014. (TranzGaz Ex. 11; TranzGaz Ex. 12; Trial Tr. 206:7-10.)

62. On April 11, 2014, Campbell assigned the PTC Patent Application to TranzGaz. (Pl. Ex. 8; Trial Tr. 255:17-22.) The assignment also stated that Campbell was assigning the "the right to file corresponding national phase applications thereon including any national phase filing made in Canada." (Pl. Ex. 8.)

63. On July 16, 2014, McGrath acquired 1,000,000 common shares of TranzGaz stock and became the majority shareholder of the corporation. (TranzGaz Ex. 3; Trial Tr. 202:22-23,

² Mackay's patent attorney is Lynn Alstandt, who is his counsel in this matter as well.

203:14-18.) On July 17, 2014, McGrath was appointed Managing Director of TranzGaz. (TranzGaz Ex. 2; Trial Tr. 202:22-23.)

64. On January 14, 2020, TranzGaz rescinded the assignment of the '049 Patent. (TranzGaz Ex. 4; Trial Tr. 210:2-15.) The rescission was approved by the shareholders of TranzGaz. (TranzGaz Ex. 4; Trial Tr. 210:2-15.)

65. On January 24, 2020, the United States Patent and Trademark Office recorded the rescinding of the '049 Patent from TranzGaz back to Campbell. (TranzGaz Ex. 10; Trial Tr. 212:5-9.)

66. The purpose of rescinding the '049 Patent was to have TranzGaz removed from this action. (Trial Tr. 211:15-212:4.) At that time, TranzGaz was unable to afford counsel and, as a business entity, was unable to proceed *pro se*. (*Id.*)

67. TranzGaz never had a bank account. (Trial Tr. 207:17.) Prior to 2014, all costs were paid by Campbell and after 2014 McGrath paid for all costs, such as filing and maintenance fees for the '049 patent. (*Id.* 203:2-5, 240:9-21.)

68. At the time of trial, TranzGaz was in the process of rescinding its other patents and dissolving itself. (*Id.* 257:18-24.)

II. CONCLUSIONS OF LAW

Based on the findings of fact set forth herein, the Court makes the following conclusions of law:

A. Correction of Inventorship

1. Legal Framework

1. Patent issuance creates a presumption that the inventors named in the patent are the true inventors. *Hess v. Advanced Cardiovascular Sys.*, 106 F.3d 976, 979 (Fed. Cir. 1997).

2. The clear and convincing burden of proof is applied to joint inventorship disputes. *Eli Lilly & Co. v. Aradigm Corp.*, 376 F.3d 1352, 1366-67 (Fed. Cir. 2004).
3. 35 U.S.C. § 256 addresses two types of errors on patents: misjoinder and nonjoinder. *Fina Tech., Inc. v. Ewen*, 265 F.3d 1325, 1328 (Fed. Cir. 2001). Misjoinder is when the patent fails to list a person who is an inventor. *See Stark v. Advanced Magnetics, Inc.*, 119 F.3d 1551, 1553 (Fed. Cir. 1997); *Eli Lilly & Co.*, 376 F.3d at 1358 (“Section 256 creates a cause of action in the district courts for correction of non-joinder.”).
4. A claim under § 256 generally consists of two steps. *See Trovan, Ltd. v. Sokymat SA*, 299 F.3d 1292, 1302 (Fed. Cir. 2002); *Nexus Techs., Inc. v. Unlimited Power Ltd.*, No. 1:19cv9, 2020 WL 6940505, at *11 (W.D.N.C. Nov. 25, 2020). The court must first construe the patent claims in dispute “to determine the subject matter encompassed” by the claims. *Nexus Techs.*, 2020 WL 6940505 at *11 (quoting *Trovan*, 299 F.3d at 1302). The court must “then compare the alleged contributions of each asserted co-inventor with the subject matter of the properly construed claim[s] to . . . determine whether the correct inventors were named.” *Id.* (internal quotations and citation omitted).
5. To prove joint inventorship under the second step, a co-inventor must have (1) contributed in some significant manner to the conception or reduction to practice of the invention, (2) made a contribution to the claimed invention that is not insignificant in quality, when that contribution is measured against the dimension of the full invention, and (3) done more than merely explain to the real inventors well-known concepts and/or the current state of the art. *Id.*; *Pannu v. Iolab Corp.*, 155 F.3d 1344, 1351 (Fed. Cir. 1998).

6. In addition to the two-step process, plaintiffs must show “some quantum of collaboration” between the alleged inventors and the inventor listed on the patent. *Id.*; *Kimberly-Clark Corp. v. Procter & Gamble Distrib. Co.*, 973 F.2d 911, 917 (Fed. Cir. 1992).
7. Finally, a plaintiff must provide “corroborating evidence of a contemporaneous disclosure that would enable one skilled in the art to make the invention.” *Burroughs Wellcome Co. v. Barr Labs, Inc.*, 40 F.3d 1223, 1228 (Fed. Cir. 1994).
8. “An individual’s testimony regarding their own inventorship ‘cannot, standing alone, rise to the level of clear and convincing proof.’” *Ferring B.V. v. Allergan, Inc.*, No. 12-cv-2650, 2019 WL 6183501, at *14 (S.D.N.Y. Sept. 27, 2019) (quoting *Symantec Corp. v. Computer Assocs. Int’l, Inc.*, 522 F.3d 1279, 1295 (Fed. Cir. 2008)). Further, “testimony that is supported only by testimonial evidence of other interested persons” is treated skeptically. *TransWeb, LLC v. 3M Innovative Props. Co.*, 812 F.3d 1295, 1302 (Fed. Cir. 2016).

2. Step One: Subject Matter at Issue

9. Claim construction is only necessary when the meaning or scope is unclear and in dispute. *Eli Lilly & Co.*, 376 F.3d at 1360. Neither party has requested claim construction.
10. “[D]ependent claims can supply additional context for construing the scope of the independent claims associated with those dependent claims.” *Intamin Ltd. v. Magnetar Techs., Corp.*, 483 F.3d 1328, 1334 (Fed. Cir. 2007).
11. Claim 1 is in dispute. Claims 2 and 5 are dependent claims that provide the scope of the port boss described in Claim 1.
12. Thus, the subject matter at issue is the port boss as described in Claims 1, 2, and 5. Specifically, at issue is the “compression and crimping” of the port boss.

3. Step Two: Contributions

a. Contribution to Conception or Reduction to Practice

13. To be a joint inventor, the individual must have contributed to the invention's conception; however, the individual does not need to contribute to every claim. *CODA Dev. S.R.O. v. Goodyear Tire & Rubber Co.*, 916 F.3d 1350, 1358 (Fed. Cir. 2019).
14. Conception is the moment "when a definite and permanent idea of an operative invention, including every feature of the subject matter sought to be patented, is known." *Bard Peripheral Vascular, Inc. v. W.L. Gore & Assocs.*, 776 F.3d 837, 845 (Fed. Cir. 2015) (citing *Sewall v. Walters*, 21 F.3d 411, 415 (Fed. Cir. 1994)). Thus, the conception of an idea is complete when the "idea is so clearly defined in the inventor's mind that only ordinary skill would be necessary to reduce the invention to practice, without extensive research or experimentation." *Bard Peripheral Vascular, Inc.*, 776 F.3d at 845 (citing *Burroughs Wellcome Co.*, 40 F.3d at 1228).
15. "[O]ne does not qualify as a joint inventor by merely assisting the actual inventor after the conception of the claimed invention." *Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d 1456, 1460 (Fed. Cir. 1998). As such, "[a]n inventor may the 'use the services, ideas, and aid of others in the process of perfecting his invention without losing his right to a patent.'" *Hoop v. Hoop*, 279 F.3d 1004, 1007 (Fed. Cir. 2002) (quoting *Ethicon, Inc.*, 135 F.3d at 1460); see *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 624 (Fed. Cir. 1985).
16. The issue of joint inventorship is "fact specific, and no bright-line standard will suffice in every case." *Fina Oil & Chem. Co. v. Ewen*, 123 F.3d 1466, 1473 (Fed. Cir. 1997).

17. The issue in this action is whether the contributions of Mackay and Hewson were part of the conception of the idea or merely assistance in perfecting an idea that had already been conceived of by Campbell.
18. In *Humanscale Corp. v. CompX International Inc.*, the invention was a support platform. No. 3:09cv86, 2010 WL 3222411, at *2 (E.D. Va. Aug. 16, 2010). The alleged contribution was the design of a “linkage plate.” *Id.* at *18. In denying a motion for reconsideration, the Court determined that the purported inventor was not a joint inventor. *Id.* While the individual had “solved a design problem by enabling the product to have a single lower linkage plate instead of separate lower linkage arms,” the actual inventor had already conceived of using a singular lower linkage plate. *Id.* at *17-18. Thus, the “solution” was one of design and not creation. *Id.* at *18. The Court concluded that it fell under the permissible “use of services, ideas, and aid of others in the process of perfecting [the] invention.” *Id.* (quoting *Shatterproof Glass Corp.*, 758 F.2d at 624).
19. In *Chirichillo v. Prasser*, the invention was a combination cook stove fluid heater and grease filter. 30 F. Supp. 2d 1132, 1134 (E.D. Wis. 1998). Prasser showed Chirichillo a prototype of the invention, and Chirichillo suggested several improvements to make it safer. *Id.* At this point, Prasser had already installed a version of the prototype in his restaurant. *Id.* at 1136. The court concluded that “while Chirichillo may have contributed to the invention by making it safer and more workable, his efforts fall into the category of assistance subsequent to conception.” *Id.* at 1137.
20. In *In re Verhoef*, the invention was a mobility device for injured dogs. 888 F.3d 1362, 1363 (Fed. Cir. 2018). Verhoef’s dog struggled to walk after undergoing surgery, and the harness he bought did not solve the issue. *Id.* at 1364. Verhoef then made a homemade

harness, but it did not solve the problem either. *Id.* He realized that the harness would work better if it was connected to the dog's toes. *Id.* At his dog's next rehabilitative therapy session, Verhoef stated, "[t]here has to be a way to connect the cord to the toes." *Id.* The veterinarian suggested configuring the strap in a figure eight around the dog's toes and wrapped around the lower part of the paw. *Id.* Verhoef tinkered with that idea and eventually patented a device that included the figure eight described by the veterinarian. *Id.* The Federal Circuit determined that the veterinarian was a co-inventor of the device. *Id.* at 1366.

21. Admittedly, this is a close case. The Court relies on the definition of conception as when the "idea is so clearly defined in the inventor's mind that only ordinary skill would be necessary to reduce the invention to practice, *without extensive research or experimentation.*" *Bard Peripheral Vascular, Inc.*, 776 F.3d at 845 (emphasis added).
22. At first glance, the facts of this action seem to mirror *Humanscale Corp.*, in which the Court determined that one is not a co-inventor when the solution is one of design and not creation. *See* 2010 WL 3222411, at *18. Here, the design problem required the creation of a new type of port boss. Thus, the solution was actually one of creation.
23. Likewise, this case is distinguishable from *Chirichillo*. In *Chirichillo*, the inventor had a functional prototype and the purported co-inventor merely added enhancements to it. *See* 30 F. Supp. 2d at 1136-37. Here, Campbell had yet to create a functional version of the pressure vessel prior to Mackay's and Hewson's involvement.
24. This case is most similar to *In re Verhoef*. Just as Verhoef knew that he needed to attach the strap to the dog's toes in order for the invention to be successful, Campbell knew that he needed to attach the port boss components by some form of compression. *See* 888 F.3d

at 1364. In supplying the idea for how to solve the problem of attaching the strap to the dog's toes, the veterinarian completed the final mental step in conceiving the idea. *Id.* Here, using the hydraulic cylinder, expanding the t-groove, and adding the starburst grooves were the final steps in conceiving the idea.

25. Mackay and Hewson developed those ideas. They developed the components of the male and female plates that comprise the port boss and developed the method used to compress those plates: using a hydraulic press to squeeze the plates together, then crimping the pipes in place. Mackay and Hewson also contributed the starburst pattern.³

26. These contributions solved the "slippage" problem that had prevented Campbell from conducting a successful test. Further, the designs were the result of a two-year effort by Mackay and Hewson that involved multiple drafts of designs. Prior to their involvement, Campbell did not have an idea that "required only ordinary skill . . . to reduce the invention to practice, without extensive research or experimentation." *See Bard Peripheral Vascular, Inc.*, 776 F.3d at 845.

27. These components are clearly included in the patent. Claim 1 references the port boss that is explained in greater detail in Claim 5 and the Detailed Description. Claim 5 references the port boss being compressed and crimped. The Detailed Description and figures 7 and 8 include the expanded t-groove and starburst grooves.

b. Significance of Contribution

28. "[T]o be a joint inventor, an individual must make a contribution to the conception of the claimed invention that is not insignificant in quality, when that contribution is measured

³ Mackay and Hewson also conceived of the angular grooves and the o-ring. However, these design attributes dealt with enhancing the seal, not reducing "slippage." The evidence has shown that the major problem was one of slippage and not one of leakage. Thus, for purposes of inventorship, their key contribution was the designs aimed at solving slippage.

against the dimension of the full invention." *Fina Oil & Chem. Co.*, 123 F.3d at 1473; *see CODA Dev. S.R.O.*, 916 F.3d at 1358.

29. Prior to their involvement, Trans Ocean Gas had at least two failed tests. The July 2007 Report outlined the "slippage" problem of the Composites Atlantic design. Mackay and Hewson added the starburst grooves to resist slippage. Without solving the slippage issue, the invention would not be viable.

30. Thus, the contributions made by Mackay and Hewson were significant.

c. Current State of the Art

31. "A person does not become a co-inventor by doing 'nothing more than explaining to the inventors what the then state of the art was and supplying a product to them for use in their invention.'" *Polyzen, Inc. v. RadiaDyne, LLC*, No. 5:11cv662, 2012 WL 4049841, at *4 (E.D.N.C. Aug. 31, 2012) (quoting *Hess*, 106 F.3d at 980-81). Using ordinary skill in the art to reduce the conception to practice does not make an individual a co-inventor either. *Finkelstein v. Mardkha*, 495 F. Supp. 2d 329, 338 (S.D.N.Y. 2007); *see Sewall*, 21 F.3d at 416.

32. Prior to their work with Campbell, neither Mackay nor Hewson had heard of a port boss. Their experience was in piping, specifically applying Pyplock to metal piping and similar activities. Further, Hewson had never worked with plastics.

33. Mackay and Hewson's contributions were more than merely explaining the state of the art or a use of ordinary skill.

4. Collaboration

34. To be co-inventors, there must be some degree of collaboration. *Bard Peripheral Vascular*, 776 F.3d at 845-46. While the inventors do not need to physically work together,

“inventors [must] have some open line of communication during or in temporal proximity to their inventive efforts.” *Id.* (quoting *Eli Lilly & Co.*, 376 F.3d at 1359).

35. Mackay and Hewson have clearly established collaboration. The emails with Campbell, the PowerPoint presentation that Campbell attended, and the presentation recorded in the video illustrate that the parties collaborated.

5. Corroboration

36. To meet the clear and convincing standard for inventorship, purported inventors must provide corroborating evidence. *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1327 (Fed. Cir. 2004); *Trovan, Ltd.*, 299 F.3d at 1302-03.

37. Corroborating evidence preferably takes the form of “physical records that were made contemporaneously with the alleged prior invention.” *Trovan, Ltd.*, 299 F.3d at 1302. However, corroborating evidence can also be oral evidence of someone other than the alleged inventor or circumstantial evidence about the inventive process. *See id.* at 1302-03; *Linear Tech. Corp.*, 379 F.3d at 1327.

38. Mackay and Hewson provided corroborating evidence in the form of dated design drafts made at the time of inventorship, the July 2007 Report outlining the problems with the prior design, emails to and from Campbell, the PowerPoint presentation, and the video of the successful application of the port boss. Given that these exhibits were created contemporaneously, they are especially persuasive.

39. Mackay and Hewson have satisfied the corroborating evidence requirement.

B. Assigning and Rescinding Patents

40. In *Kramer v. Caribbean Mills, Inc.*, the Supreme Court declined to reexamine prior cases that held “where the transfer of a claim is absolute, with the transferor retaining no interest

in the subject matter, then the transfer is not improperly or collusively made, regardless of the transferor's motive.” 394 U.S. 823, 828 n.9 (1969). In response, courts have reached an array of different conclusions regarding the impact of purported sham transfers.⁴

41. However, the actual outcome of *Kramer* was that the assignment was “improperly or collusively made” and, thus, the plaintiff could not use the assignment to manufacture jurisdiction. *Id.* at 828-30.

42. This Court has interpreted *Kramer* to mean that “presumptively legal and valid assignments remain subject to . . . analysis of whether the assignment improperly attempted to create *or to destroy jurisdiction*.” *E. I. du Pont de Nemours & Co. v. Agfa NV*, No. 2:18cv326, 2018 WL 7283319, at *18 (E.D. Va. Oct. 30, 2018) (emphasis added); *see also Long & Foster Real Estate, Inc. v. NRT Mid-Atl., Inc.*, 357 F. Supp. 2d 911, 915-21 (E.D. Va. 2005); *Attorneys Tr. v. Videotape Computer Prod., Inc.*, 93 F.3d 593, 597 (9th Cir. 1996) (holding that a prelitigation transfer did not destroy jurisdiction).

43. Analysis of whether the rescission’s purpose was to destroy jurisdiction is not difficult.

McGrath testified that TranzGaz divested itself of the ’049 Patent to get out of the lawsuit.

⁴ In *Foseco, Inc. v. Consolidated Aluminum Corp.*, the court found that there was no existing case or controversy when a party assigned its rights to a patent to another party during the course of litigation. No. 88-85, 1989 WL 138663, at *1 (E.D. Mo. Apr. 13, 1989). The court distinguished the case from *General Battery Corp. v. Globe-Union, Inc.*, in which the court declined to dismiss a patent suit after the owner transferred its interest to a non-party. *Foseco*, 1989 WL 138663, at *2; *General Battery Corp.*, 100 F.R.D. 258 (D. Del. 1982). In *Foseco*, the transfer did not dispose of the case and the plaintiff was still a party. 1989 WL 138663, at *2.

In *Pharmachemie B.V. v. Pharmacia S.p.A.*, the defendant assigned title to the patents-in-suit to the co-defendant several weeks after the lawsuit was initiated. 934 F. Supp. 484, 489 (D. Mass. 1996). The plaintiff argued that the timing of the transfer proved that it was a sham transaction intended to destroy jurisdiction. *Id.* While noting that “it is likely that the timing of the transfer [was] no mere coincidence,” the court held that it lacked subject matter jurisdiction. *Id.* The court, relying on *Kramer*, held that it “[could not] disregard the fact that the assignment of title to the patents divest[ed] this Court of declaratory judgment jurisdiction regardless of the motive behind the assignment.” *Id.* (citing 394 U.S. at 827 n.9); *see Grassi v. Ciba-Geigy, Ltd.*, 894 F.2d 181, 185 (5th Cir. 1990). *But see Karachi Bakery India v. Deccan Foods LLC*, No. 14-5600, 2017 WL 4922013, at *4 (D.N.J. Oct. 31, 2017) (noting that a sale that was made for the purpose of avoiding jurisdiction would not be a valid assignment). *But cf. Trend Micro Corp. v. Whitecell Software, Inc.*, No. C-10-02248, 2011 WL 499951, at *5 (N.D. Cal. Feb. 8, 2021) (granting a motion to dismiss as the assignment was not a “collusive ploy to skirt judication,” but not addressing whether a contrary finding would have preserved jurisdiction).

44. As such, the Court maintains jurisdiction over TranzGaz.

C. Foreign Patents

45. District courts can compel parties to transfer ownership of foreign patents, “just as they would any other equitable remedy.” *Sionyx LLC v. Hamamatsu Photonics K.K.*, 981 F.3d 1339, 1354 (Fed. Cir. 2020) (citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1249 (Fed. Cir. 1989)). “This is because an order compelling a party to assign ownership of a foreign patent is an exercise of the court’s authority over the party, not the foreign patent office in which the assignment is made.” *Id.* Likewise, a district court can compel a party to correct the inventorship of a foreign patent. *See Chou v. Univ. of Chi. & Arch Dev. Corp.*, 254 F.3d 1347, 1360 (Fed. Cir. 2001) (“Since inventorship on such applications normally follows the inventorship designation in the originating country, . . . if [the court] concludes on remand that [plaintiff] is properly an inventor of the disputed subject matter, [it] can instruct the [defendant] to take appropriate action to change the inventorship designation on the foreign patent applications.”).

46. Therefore, the Court can order TranzGaz to correct the inventorship of the foreign patents.

D. Affirmative Defenses

1. Laches

47. Laches is an equitable defense that may bar a correction of inventorship claim. *Serdarevic v. Advanced Med. Optics, Inc.*, 532 F.3d 1352, 1358 (Fed. Cir. 2008). The decision to apply laches is left to the sound discretion of the district court. *Id.*

48. A defendant must establish the following elements to succeed on a defense of laches: “(1) the plaintiff’s delay in filing a suit was ‘unreasonable and inexcusable,’ and (2) the

defendant suffered ‘material prejudice attributable to the delay.’” *Pei-Herng Hor v. Ching-Wu Chu*, 699 F.3d 1331, 1334 (Fed. Cir. 2012).

49. “[A] delay of more than six years after the omitted inventor knew or should have known of the *issuance of the patent* will produce a rebuttable presumption of laches.” *Advanced Cardiovascular Sys., Inc. v. SciMed Life Sys., Inc.*, 988 F.2d 1157, 1163 (Fed. Cir. 1993) (emphasis added).

50. A claim for correction of inventorship does not accrue until a patent is issued, so the period before the patent was issued is not part of the laches period. *Pei-Hreng Hor*, 699 F.3d at 1335.

51. While the ’049 Patent was derived from an application known to Plaintiffs in 2011 and published in 2014, it was not issued until June 28, 2016. Plaintiffs initiated this lawsuit on September 17, 2019. Thus, the “delay” was substantially less than six years, and there is no presumption of laches. While Campbell has suffered some prejudice, he did not provide evidence of material prejudice.

52. Therefore, laches does not apply to this action.

2. Equitable Estoppel

53. Equitable Estoppel has three elements:

(1) a misleading communication, whether by words, conduct or silence, that would support an inference that the actor does not intend to assert a claim of inventorship; (2) substantial reliance upon that communication by the party asserting estoppel; and (3) material prejudice to the party asserting estoppel if the claim is allowed to proceed.

BorgWarner, Inc. v. Honeywell Int’l, Inc., 747 F. Supp. 2d 554, 560 (W.D.N.C. 2010)

(citing *A.C. Aukerman Co. v. R.L. Chaides Constr. Co.*, 960 F.2d 1020, 1041-43 (Fed. Cir.

1992)). The application of equitable estoppel is left to the sound discretion of the trial court. *Id.*

54. Silence only counts as a misleading communication when there was an obligation to speak.

Meyers v. Asics Corp., 974 F.2d 1304, 1308 (Fed. Cir. 1992); *A.C. Aukerman*, 960 F.2d at 1028; *BorgWarner*, 747 F. Supp. 2d at 560.

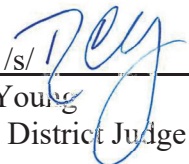
55. Given the hostilities between the parties, there was no miscommunication. Tube-Mac has been consistent in its communications with Campbell that it believed Mackay and Hewson were co-inventors. Further, Campbell has not alleged that Plaintiffs were under any obligation to speak.

56. As such, equitable estoppel does not apply to this action.

III. CONCLUSION

For the reasons discussed above, Plaintiffs Gary Mackay and Dan Hewson have shown by clear and convincing evidence that they are co-inventors of the device contained in the '049 Patent.

An appropriate Order shall issue.



/s/ Roderick C. Young
United States District Judge

Richmond, Virginia

Date: July 25, 2022